Translation

PCT Application
PCT/JP2003/010971

524,341

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference W1017-00	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/JP2003/010971	International filing date (*day/month/year*) 28 August 2003 (28.08.2003)	Priority date (*day/month/year*) 18 October 2002 (18.10.2002)
International Patent Classification (IPC) or national classification and IPC A61B 6/03		
Applicant HITACHI MEDICAL CORPORATION		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 7 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of _____ sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☒ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
22 September 2003 (22.09.2003)	20 January 2004 (20.01.2004)
Name and mailing address of the IPEA/JP Facsimile No.	Authorized officer Telephone No.

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ational application No.
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I. Basis of the report

1. With regard to the elements of the international application:*

☒ the international application as originally filed

☐ the description:

pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

☐ the claims:

pages _____, as originally filed
pages _____, as amended (together with any statement under Article 19
pages _____, filed with the demand
pages _____, filed with the letter of _____

☐ the drawings:

pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

☐ the sequence listing part of the description:

pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language _____ which is:

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

☐ the language of publication of the international application (under Rule 48.3(b)).

☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____

☐ the claims, Nos. _____

☐ the drawings, sheets/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* *Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).*

** *Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.*

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III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application.

☒ claims Nos. 5-9

because:

☐ the said international application, or the said claims Nos. _____ relate to the following subject matter which does not require an international preliminary examination *(specify)*:

☒ the description, claims or drawings *(indicate particular elements below)* or said claims Nos. 5-9 are so unclear that no meaningful opinion could be formed *(specify)*:

See supplemental sheet

☐ the claims, or said claims Nos. _____ are so inadequately supported by the description that no meaningful opinion could be formed.

☐ no international search report has been established for said claims Nos. _____.

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

☐ the written form has not been furnished or does not comply with the standard.

☐ the computer readable form has not been furnished or does not comply with the standard.

Supplemental Box
(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: III. 1.

Claims 5 to 7 contain the wording "polygonal display pixels", but the meaning of this term is unclear. From the preceding disclosure, it is interpreted as meaning that the display device has polygonal pixels.

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V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	2-4, 10-14	YES
	Claims	1	NO
Inventive step (IS)	Claims	2-4, 11-14	YES
	Claims	1, 10	NO
Industrial applicability (IA)	Claims	1-4, 10-14	YES
	Claims		NO

2. Citations and explanations

Claim 1

Document 1: JP 2002-291732 A (GE Medical Systems Global Technology Company L.L.C.), 8 October 2002, entire text; fig. 1 to 9

Document 1 sets forth an X-ray tomograph configured in such a manner that a subject is positioned on a bed located between an X-ray source and an X-ray detector, and the aforementioned bed can be moved relative to the axis of orbit while the aforementioned X-ray source and X-ray detector are spun around said axis; and X-rays irradiated from the aforementioned X-ray source and passing through the subject are detected by the aforementioned X-ray detector; and having a reconstructing means which prepares a three-dimensional tomogram of the area of interest of the subject from the detected projection data; wherein the aforementioned reconstructing means determines projection data which can be reverse-projected having a working projection data phase width of 180° for each voxel, superimposes a reconstructing filter, allocates weightings to data having the same or opposite phase at each phase in respect to this projection data range, and performs three-dimensional projection of this filtered projection data over the aforementioned determined range of data which can

be reverse projected along the irradiation trajectory of the X-ray beam.

Claim 10

Document 2: JP 8-187240 A (Toshiba Corporation), 23 July 1996, entire text; fig. 1 to 11

Document 3: JP 10-290798 A (GE Yokogawa Medical Systems, Ltd.), 4 November 1998, entire text; fig. 1 to 12 (Family: none)

Document 2 indicates that an X-ray detector having detector elements arranged in two-dimensions, and document 3 indicates that one-dimensional repositioning is carried out to obtain parallel beam projection data from fan beam projection data.

Claims 2 to 4 and 11 to 14

None of the documents cited in the international search report indicates that in determining the projection data range which is used in reconstruction, the aforementioned projection data range is determined in such a manner that the difference in absolute values of cone angles at both ends of the aforementioned projection data range is reduced, or the maximum cone angle of the beam projected for each voxel is minimized, or the phase direction range of the beam reverse-projected for each voxel is minimized; the projection data range which can be reverse-projected is set to 270°or 360°; and the weighting coefficient is generated from the weighting function of phase direction in order to compensate data redundancy for each phase according to the phase width of projection data, the aforementioned weighting coefficient is weighted, and three-dimensional reverse projection is performed along the trajectory nearest to the reverse-projection area, and said features would not be obvious to

a person skilled in the art.